THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

Paper No. 29

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte JÜRGEN EICHLER, REINHARD KRUMBÖCK, WENZEL KÜHN, PETER SCHWARZMAIER, THOMAS WILD, RUDOLF SPIELMANNLEITNER, MANFRED STÖGER, and INGOLF MIELKE

Appeal No. 1996-3367
Application No. 08/480,554

ON BRIEF

Before JOHN D. SMITH, PAK, and KRATZ, Administrative Patent Judges.

KRATZ, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the examiner's final rejection of claims 1-10 and 13, which are all of the claims pending in this application.

BACKGROUND

Appellants' invention is directed to a method of reacting ethylene and chlorine in the presence of a specified catalyst to form 1,2-dichloroethane. An understanding of the invention can be derived from a reading of exemplary claim 1, which is reproduced below.

1. A process for preparing 1,2-dichloroethane by reaction of ethylene with chlorine in the presence of a sodium chloride-iron(III) chloride catalyst, which comprises maintaining the molar ratio of sodium chloride to iron(III) chloride from 0.3 to below 0.5 during the whole reaction.

The prior art references of record relied upon by the examiner in rejecting the appealed claims are:

Berkowitz et al. (Berkowitz)	3,496,243	Feb. 17, 1970
Di Fiore et al. (Di Fiore)	3,911,036	Oct. 07, 1975
Böttger et al. (Böttger) (German Offenlegungsschrift)	DE 4103281	Aug. 06, 1992

Claims 1-10 and 13 stand rejected under 35 U.S.C. § 103 as being unpatentable over Böttger[1] in view of Berkowitz and Di Fiore.

OPINION

We have carefully reviewed the specification, claims and applied prior art, including all of the arguments advanced by the examiner and appellants in support of their respective positions. This review leads us to conclude that the examiner's § 103 rejection of claims 1-6, 8-10 and 13 is well founded, but not the rejection, on the same grounds, of claim 7. Accordingly, we will sustain the examiner's rejection of claims 1-6, 8-10 and 13 under 35 U.S.C. § 103 as being unpatentable over the applied prior art for substantially those fact findings and conclusions set forth in the answer and as further discussed below. However, we will not sustain the examiner's § 103 rejection as applied to claim 7. Our reasons follow.

---

[1] All subsequent references in this opinion to Böttger are references to the English language translation of the published German Offenlegungsschrift of record. A copy of the translation will be forwarded to appellants together with a copy of this decision.

Appellants state that the claims do not stand or fall together and furnishes the following groups: I) claims 1, 3, 4, 5, 9 and 10; II) claim 2; III) claim 6; IV) claim 7; and V) claim 8[2] (brief, page 4). Appellants have only furnished separate substantive arguments for claims that are members of separate groupings of claims as identified by appellants, not for any separate claims that are members of the same grouping. We therefore limit our discussion to one claim in each group identified by appellant, i.e., claims 1, 2, 6, 7 and 8. *See In re Ochiai*, 71 F.3d 1565, 1566 n.2, 37 USPQ2d 1127, 1129 n.2 (Fed. Cir. 1995); 37 CFR § 1.192(c)(7) and (c)(8)(1995).

Rejection of Claims 1, 3, 4, 5, 9 and 10

As correctly noted by the examiner (answer, pages 3 and 4), Böttger discloses and exemplifies a method of preparing 1,2-dichloroethane by reacting ethylene with chlorine in the presence of a catalyst including iron chloride and sodium

[2] Since claim 13 depends from claim 8 (Group V) and appellants have not identified a separate grouping of claims to which claim 13 belongs, we consider claim 13 as a member of appellants' Group V claims for purposes of this appeal.

chloride wherein the molar ratio of sodium chloride to iron chloride is reported as 0.33 (Example 2). This method substantially corresponds to the claimed method at issue herein wherein a sodium chloride to iron chloride ratio of "from 0.3 to below 0.5 during the whole reaction" (representative claim 1) is called for. According to the examiner (answer, pages 3 and 4),

> [I]t is reasonable that the ratio will stay the same "during the whole reaction". This is so in part because, by definition, a catalyst is not consumed during the reaction.

We agree. It would have been *prima facie* obvious to one of ordinary skill in the art to maintain the catalyst ratio as taught by Böttger in Example 2 within the claimed range herein during the course of the reaction. We further note that there is no disclosure in Böttger that appellants have pointed to which would expressly require or suggest that the catalyst ratio of Example 2 is changed during the reaction to some ratio outside of that claimed herein as intimated in the brief.[3]

---

[3] In so far as Böttger may be fairly construed as disclosing a catalyst ratio within the claimed range which is maintained during the course of reaction as noted above, Böttger teaches all the limitations of claim 1. A disclosure

Appellants have not furnished any objective evidence to support the unsubstantiated arguments suggesting the catalyst component ratio would change as a result of corrosion (brief, page 7). We are in agreement with the examiner (answer, pages 6 and 7) that the unsupported allegations of appellants to the contrary are entitled to little weight and are not persuasive absent convincing objective evidence establishing that the practice of the process as exemplified in Example 2 of Böttger would have necessarily resulted in a catalyst component ratio outside of that claimed herein.

Appellants argue (brief, pages 5-7), in effect, that Böttger teaches a higher ratio of the catalyst components than that claimed herein; hence, Böttger teaches away from the claimed process. This line of argument is not well taken since the disclosure of Böttger is not limited to the preferred embodiments thereof (see, e.g., Examples 4-6 of the Offenlegungsschrift) but also includes the so called

---

that anticipates under 35 U.S.C. § 102 also renders the claim unpatentable under 35 U.S.C. § 103, for "anticipation is the epitome of obviousness." Jones v. Hardy, 727 F.2d 1524, 1529, 220 USPQ 1021, 1025 (Fed. Cir. 1984). See also In re Fracalossi, 681 F.2d 792, 794, 215 USPQ 569, 571 (CCPA 1982); In re Pearson, 494 F.2d 1399, 1402, 181 USPQ 641, 644 (CCPA 1974).

comparison Example 2 that discloses a ratio of catalyst components within the claimed range whether considered as a ratio of 0.33 as reported by Böttger or as a ratio of 0.28 as suggested may be the case by appellants (brief, page 6). In this regard, a reference may be relied upon for all that it would have reasonably suggested to one having ordinary skill the art, including non-preferred embodiments. *Merck & Co. v. Biocraft Labs.*, Inc., 874 F.2d 804, 807, 10 USPQ2d 1843, 1846 (Fed. Cir.), *cert. denied*, 493 U.S. 975 (1989). Moreover, in evaluating such references it is proper to take into account not only the specific teachings of the references but also the inferences which one skilled in the art would reasonably be expected to draw therefrom. *In re Preda*, 401 F.2d 825, 826, 159 USPQ 342, 344 (CCPA 1968).

"The use of patents as references is not limited to what the patentees describe as their own inventions or to the problems with which they are concerned. They are part of the literature of the art, relevant for all they contain." *In re Heck*, 699 F.2d

1331, 1332-1333, 216 USPQ 1038, 1039 (Fed. Cir. 1983) (quoting In re Lemelson, 397 F.2d 1006, 1009, 158 USPQ 275, 277 (CCPA 1968)).

We are mindful of the potential disadvantage of the possible requirement of a subsequent "high-boiler distillation" in some applications such as vinyl chloride production via direct "thermal cleavage" from the 1,2-dichloroethane product that Böttger (English translation, pages 6 and 7) may be viewed as attributing to the lower catalyst component ratio of Example 2 and as claimed herein. Nevertheless, we conclude that a skilled artisan would have recognized the Example 2 and smaller sodium chloride to ferric chloride ratio catalyst embodiment disclosed by Böttger is an obviously available option where such concerns are not relevant or outweighed by the increasing sodium chloride demand of the disclosed higher sodium chloride ratio embodiment. This is especially so since appellants' claimed process is not limited to a process for the direct formation of vinyl chloride without removal of high boilers via distillation.

In addition, appellants have not clearly substantiated any identified and nonobvious refinement to the use of the

lower sodium chloride ratio method that would necessarily alleviate any concerns of a skilled artisan that may have been identified by Böttger. In particular, we note that appellants suggested comparison of Example 2 of Böttger with appellants' Example 2 is not convincing in establishing that the ratio of sodium chloride to iron chloride ever exceeded 0.5 in Example 2 of Böttger (brief, pages 6 and 7). We note, for instance, that a washing step, a different reaction pressure and temperature, a larger size reactor, etc. were present in Example 2 of Böttger as compared to appellants' Example 2. Contrary to appellants' assertions, we find that it cannot be ascertained from a direct comparison of the above-noted examples, the origin of the allegedly differing results due to the number of unconstrained variables. *See In re Dunn*, 349 F.2d 433, 439, 146 USPQ 479, 483 (CCPA 1965) ("[t]he cause and effect sought to be proven is lost here in the welter of unfixed variables").

In addition, we find that appellants have not demonstrated that Example 2 in their specification is reasonably commensurate in scope with the degree of protection sought by the appealed claims. *See In re Kulling,* 897 F.2d

1147, 1149, 14 USPQ2d 1056, 1058 (Fed. Cir. 1990); *In re Grasselli*, 713 F.2d 731, 743, 218 USPQ 769, 778 (Fed. Cir. 1983).

Accordingly, we shall sustain the examiner's § 103 rejection of claims 1, 3, 4, 5, 9 and 10 as unpatentable over Böttger in view of Berkowitz and Di Fiore.[4]

Rejection of Claim 2

With respect to dependent claim 2, appellants (brief, page 9) further argues, in effect, that the applied prior art would not have suggested a ratio of sodium chloride to iron chloride from 0.3 to 0.45. As set forth above, however, Böttger discloses such a ratio (0.33) in Example 2. For the reasons set forth above regarding appellants' Example 2, the additional Examples 3 and 4 are likewise unconvincing of unexpected results or the lack of maintenance of a ratio within the claimed range during the reaction in Böttger. While appellants assert in the brief (page 6) that the ratio of Example 2 of Böttger is correctly 0.28, such assertion has

[4] Since we find the disclosure of Böttger sufficient to sustain the examiner's stated rejection of this grouping of claims, we find that it is unnecessary to discuss the additional teachings of Berkowitz and Di Fiore.

not been substantiated with any objective evidence. Moreover, even if a skilled artisan would have understood Böttger to have used a ratio of 0.28 moles of sodium chloride to iron chloride in Example 2 thereof, we note that such a teaching coupled with the disclosure of good results in purity obtention being obtainable with small concentrations of sodium chloride (page 7, paragraph 3 of Böttger) would have rendered the claimed ratio *prima facie* obvious to one of ordinary skill in the art. Thus, we shall sustain the examiner's § 103 rejection of claim 2.

Rejection of Claim 6

We are not convinced by appellants' suggestion that the pressure (0.4 to 0.6 bar gauge) of the reaction process recited in claim 6 would have been unobvious over the applied prior art for reasons set forth by the examiner (answer, page 4). We observe that Böttger discloses that the use of "normal and excess pressure" (page 2) was generally known in the art and discloses a specific over pressure of 1.3 bar (page 5) and 0.8 bar (Example 2). Certainly, a skilled artisan would have been imbued with both a suggestion and a reasonable expectation of success in carrying out the chlorination

reaction of Böttger at over pressures within the claimed range from such a disclosure. Accordingly, we shall sustain the examiner's § 103 rejection of claim 6.

Rejection of Claim 7

Here, we find ourselves in agreement with appellants' position (brief, page 10) in that the examiner has not furnished a sufficient factual basis to support the notion that the claimed step of setting the gauge pressure by inert gas blanketing would have been obvious to one of ordinary skill in the art at the time of the invention from the relied upon references' teachings. While Berkowitz may disclose the use of a diluent such as nitrogen in a process similar to that of Böttger as proffered by the examiner (answer, page 4), the examiner has not pointed to any evidence establishing the obviousness of setting a gauge pressure of 0.4 to 0.6 bar by inert gas blanketing. Accordingly, we will not sustain the examiner's stated rejection of claim 7 on this record.

Rejection of Claims 8 and 13

As set forth above, we have selected claim 8 as the representative claim on which we decide the appeal of the examiner's rejection as to this grouping of claims and we find

ourselves in agreement with the examiner's basic position. We note that De Fiore discloses the use of a separator (7) wherein gases are separated off (11) and the dichloroethane condensate (distillate) is recycled to the reactor (1). The use of such a condensate recycle procedure in Böttger's similar process would have been *prima facie* obvious to one of ordinary skill in the art since Böttger teaches that the dichloroethane may be used as the reaction medium (See, e.g., pages 1 and 2 and examples). That one of ordinary skill in the art would have maintained the condensation (separation) vessel such as vessel 7 of Di Fiore as used in a recycle operation in Böttger at a lower or reduced pressure would have been implicit in the downstream location of such a separation vessel from the reactor especially in that lower pressures would have been expected to enhance a vapor/liquid separation process. In this regard, we note that an ordinarily skilled artisan is presumed to have some skill. *See In re Bozek*, 416 F.2d 1385, 1390, 163 USPQ 545, 549 (CCPA 1969). Accordingly, not withstanding appellants' contrary viewpoint, we will sustain the examiner's rejection of representative claim 8,

the patentability of claim 13 falling therewith for reasons as set forth above.

CONCLUSION

The decision of the examiner to reject claims 1-6, 8-10 and 13 under 35 U.S.C. § 103 as being unpatentable over Böttger in view of Berkowitz and Di Fiore is affirmed. The decision of the examiner to reject claim 7 under 35 U.S.C. § 103 as being unpatentable over Böttger in view of Berkowitz and Di Fiore is reversed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

AFFIRMED-IN-PART

JOHN D. SMITH Administrative Patent Judge	)
CHUNG K. PAK Administrative Patent Judge	) BOARD OF PATENT APPEALS AND INTERFERENCES
PETER F. KRATZ Administrative Patent Judge	)

tdl

Ashley I. Pezzner
CONNOLLY and HUTZ
P.O. Box 2207
Wilmington, DE 19899-2207

APPEAL NO. - JUDGE KRATZ
APPLICATION NO. 08/480,554

APJ KRATZ

APJ JOHN D. SMITH

APJ PAK

DECISION: **AFFIRMED-IN-PART**

Prepared By: TINA

DRAFT TYPED: 23 Apr 01

FINAL TYPED: